NORTH CAROLINA DIVISION OF AIR QUALITY

PSD Pre-Construction Approval and Preliminary Determination

Permit Issue Date: INSERT DATE

Region: Raleigh Regional Office
County: Halifax
NC Facility ID: 4200007
Inspector's Name: Will Wike
Date of Last Inspection: 06/09/2015
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): KapStone Kraft Paper Corporation

Facility Address:
KapStone Kraft Paper Corporation
100 Gaston Road
Roanoke Rapids, NC 27870

SIC: 2621 / Paper Mills Exc Building Paper
NAICS: 322121 / Paper (except Newsprint) Mills

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 15A NCAC 02D .0530
NSPS:
NESHAP:
PSD:
PSD Avoidance:
NC Toxics:
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Mike Knudson Environmental Manager (252) 533-6280 100 Gaston Road Roanoke Rapids, NC 27870	Wilbur Kessinger, Jr. Vice President of Mill Operations (252) 533-6398 100 Gaston Road Roanoke Rapids, NC 27870	Mike Knudson Environmental Manager (252) 533-6280 100 Gaston Road Roanoke Rapids, NC 27870

Application Data

Application Number: 4200007.15E
Date Received: 10/29/2015
Application Type: Modification
Application Schedule: PSD

Existing Permit Data
Existing Permit Number: 01649/T55
Existing Permit Issue Date: 08/27/2015
Existing Permit Expiration Date: 12/31/2017

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2014	72.13	1446.35	~~752.52~~*	773.70	229.76	178.15	134.56 [Methanol (methyl alcohol)]
2013	400.71	1585.29	246.84	728.03	260.73	123.24	81.30 [Methanol (methyl alcohol)]
2012	818.21	1379.46	286.67	689.96	284.10	168.53	127.38 [Methanol (methyl alcohol)]
2011	880.80	1412.92	283.90	569.60	358.42	173.22	132.80 [Methanol (methyl alcohol)]
2010	914.97	1515.68	299.48	598.24	265.90	178.01	136.92 [Methanol (methyl alcohol)]

* According to applicant email 02/10/16 The 2014 Facility-wide VOC emissions total is incorrect. It should be 348.3 tons as submitted in the Air Emissions Inventory (AEI).

Review Engineer: Charles F. Yirka

Review Engineer's Signature: **Date:** INSERT DATE

Comments / Recommendations:
Issue 01649/T56
Permit Issue Date: INSERT DATE
Permit Expiration Date: December 31, 2017

I. Facility Description

KapStone Kraft Paper (KapStone) owns and operates the Roanoke Rapids Mill, an unbleached pulp and paper manufacturing facility located on the Roanoke River in Roanoke Rapids, Halifax County, North Carolina. The primary activities at the Roanoke Rapids pulp and paper mill (Roanoke Rapids Mill) are pulp production (Standard Industrial Classification [SIC] code 2611) and paper production (SIC code 2621). Primary operations at the mill include multiple fuel-fired boilers, chemical recovery operations, wood pulping operations, unbleached papermaking, woodyard operations, and additional operations and equipment necessary to support these operations. The mill started up in 1907, has approximately 500 employees, and produces a nominal 505,000 tons per year of pulp to produce unbleached Kraft paper, and linerboard.

II. Attainment Status of Area

The Roanoke Rapids Mill is located in Halifax County. The current Section 107 attainment status designations for areas within the state of North Carolina are summarized in 40 CFR 81.334. Halifax County is classified as "better than national standards" for total suspended particulates (TSP, also referred to as Particulate Matter, PM, which includes particulate matter less than 10 microns, PM10) and for the sulfur dioxide (SO2) standards. Halifax County is designated as "unclassifiable/attainment" for carbon monoxide (CO), the nitrogen dioxide (NO2) 1-hour standard, PM2.5, lead, and ozone. Halifax County is designated as "cannot be classified or better than national standards" for the NO2 annual standard. Therefore, the Roanoke Rapids Mill is not located in an area currently designated as "nonattainment" for any compound regulated under the National Ambient Air Quality Standards (NAAQS).

III. Purpose of Application

The Roanoke Rapids Mill is requesting a revision to the monitoring required for compliance with the existing No. 7 Recovery Furnace BACT limits in Title V Permit Number 01649T55. The No. 7 Recovery Furnace has been through NSR/PSD review in the past due to modifications and has short term concentration and 12-month mass emission limits as BACT. As part of the compliance monitoring for these BACT limits, the permit requires that the daily black liquor solids (BLS) firing rate be no greater than 3.2 million lbs BLS/day and the annual firing rate be no greater than 584,000 tons per 12 months. However, KapStone believes that the recovery furnace is capable of firing a higher throughput and meeting the current BACT limits as currently configured, without further modification. The mill is requesting that the BACT monitoring be revised by removing the throughput limits and instead require monitoring of emissions using CEMS or stack test-based emission factors and daily BLS throughput. Annual rolling total emissions will be calculated and compared to BACT limits each day. Periodic stack testing will be performed to confirm or update emission factors.

IV. Background

The Roanoke Rapids Mill produces softwood pulp from purchased wood chips and on-site chipping operations. The kraft cooking process is used to separate the lignin and wood fiber to produce brown pulp from wood chips. Softwood pulp is produced in batch digesters, washed, separated from wood knots, and screened. Three pulping lines are used, designated as A-, B-, and C-lines. The vacuum drum brownstock washers on B- and C-lines are controlled, but the A-line washers are not. None of the filtrate/foam tanks are controlled.

The organic or lignin laden filtrates (black liquor) from the pulping and brown stock washing are concentrated through evaporators. The black liquor is concentrated and burned in a non-direct contact evaporator (NDCE) recovery furnace. The furnace produces steam for energy generation and heat for the

pulp and paper making process. The molten inorganic ash (smelt) from the recovery furnace is dissolved in weak wash to make green liquor which is reprocessed into reusable cooking chemicals. The causticizing process combines lime with the green liquor in a series of slakers to produce a sodium hydroxide and sodium sulfide solution (white liquor). A by-product of slaking is lime mud which is washed and then reburned in a lime kiln to produce reusable lime.

The mill is permitted to utilize one power boiler and a package boiler to produce steam for energy generation and provide heat for the pulping and paper making processes. Through cogeneration by utilization of one steam-driven turbine, the mill produces roughly 50 percent of the electricity and all of the steam required by the mill. The mill is permitted to use temporary boilers during planned maintenance outages of the permanent boilers.

Product paper is produced from the pulp on two paper machines. Paper produced on the paper machines is cut and sized and shipped in roll form to final customers.

V. Plant Location

The KapStone Roanoke Rapids Mill is located in Roanoke Rapids, North Carolina in Halifax County on the Roanoke River. The approximate UTM coordinates of the mill are Zone 18, 263.3 km east and 4039.8 km north, at an elevation of approximately 65 feet above mean sea level. Figure 2-1 of the application displays the plant site location, and Figure 2-2 of the application displays the plant site and surrounding terrain. A facility plot plan is presented in Figure 2-3 of the application. The Roanoke Rapids area is located in the northeastern part of North Carolina, and the terrain surrounding the site is gently rolling.

VI. Application Chronology

October 6, 2015 - Meeting was held with DAQ Permitting staff, KapStone, AECOM consultants and RRO engineer Charles McEachern to discuss the No. 7 Recovery Furnace BACT monitoring revisions.

October 29, 2015 – PSD permit application received for the No. 7 Recovery Furnace.

November 20, 2015 – Letter and PSD application sent to EPA Region IV and complimentary copy to FLM.

November 23, 2015 – Completeness letter sent.

January 19, 2016 – Request for additional information regarding revised testing requirements for the No. 7 Recovery Furnace BACT revisions.

January 20, 2016 – Additional information received.

February 9, 2016 – Draft permit and review document forwarded to Michael Knudson of KapStone, Raleigh Regional Office (RRO) and Samir Parekh (SSCB) for comments.

February 10, 2016 – Comments from KapStone received.

February 11, 2016 – Comments from RRO received.

February 17, 2016 – Draft permit sent to public notice and EPA review.

March 19, 2016 – Public comment period ends.

April 2, 2016 – EPA comment period ends.

VII. Recent Permit History

August 27, 2015 – Permit No. 01649T55 issued pursuant to Application No. 4200007.14B, .14C, .15A. This combined permitting event was a 02Q .0501(d)(1) modification to the existing Title V permit. The purpose of the applications was:

- to use stack test results to update the minimum required flow rate of the two scrubbers (ID Nos. 11-CD-001-001 and 11-CD-001-002) installed on No. 1 Power Boiler. Pursuant to Permit Condition 2.1 I.8. n.
- to use stack test results to update the scrubber pH-SO_2 removal efficiencies within the PSD Avoidance condition.
- for DAQ to revise the Clean Air Interstate rule (CAIR) language to reflect that the provisions in 15A NCAC 2D .2400 no longer apply to No. 1 Power Boiler. This is the only boiler at the facility that is represented in the current permit as being subject to CAIR under 15A NCAC 2D .2400.

September 4, 2013 - Permit No. 01649T54 issued pursuant to Application No. 4200007.13B. This permitting event was a 02Q .0501(d)(1) modification to the existing Title V permit, and thus satisfying the requirements both in 15A NCAC 02D .0530 "Prevention of Significant Deterioration" and 15A NCAC 02Q .0500 "Title V Procedures".

January 10, 2013 - Permit No. 01649T53 issued pursuant to Application No. 4200007.11A. This application was for the renewal of KapStone's Title V air quality permit.

June 14, 2012 - Permit No. 01649T52 issued pursuant to Application No. 4200007.12A. The purpose of this application was to install a temporary enclosed flare.

April 30, 2012 - Permit No. 01649T51 issued pursuant to Application No. 4200007.12B. The purpose of this application was a minor modification to increase pulp and paper production capacity through mechanical changes to several existing processes.

March 30, 2012 - Permit No. 01649T50 issued pursuant to Application No. 4200007.11B. The purpose of this application was a significant modification to add one natural gas/distillate fuel-fired boiler with a maximum heat input of 245 million Btu per hour to produce steam for energy generation and provide heat for the pulp and paper processes.

December 21, 2011 - Permit No. 01649T49 issued pursuant to Application No. 4200007.11C. The purpose of this application was a minor modification to add a diesel-fired portable bark grinder with a 1,200 hp maximum rating which will be used to process bark into fuel.

February 21, 2011 - Permit No. 01649T48 issued pursuant to Application No. 4200007.09D. The purpose of this application was a Part 2 MACT "Hammer" application for seven existing boilers.

August 10, 2010 - Permit No. 01649T47 issued pursuant to Application No. 4200007.10B. The purpose of this application was a minor modification to add natural gas to the list of fuels that can be fired in the lime kiln.

June 23, 2010 - Permit No. 01649T46 issued pursuant to Application No. 4200007.10A. The purpose of this application was a minor modification to revise Specific Condition 2.1 M.3 to use specific NOx emission factors for each engine(s) if available, AP-42 otherwise, used by the Porta Chipper (ES-01-PU-014).

November 13, 2009 - Permit No. 01649T45 issued pursuant to Application No. 4200007.09E. The purpose of this application was to administratively correct the annualized BLS firing rate from 547,000 tons per year to 584,000 tons per year.

June 16, 2009 - Permit No. 01649T44 issued pursuant to Application No. 4200007.09C. The purpose of this application was to add the ability to utilize petroleum coke (petcoke) as a fuel for the lime kiln.

February 13, 2009 - Permit No. 01649T43 issued pursuant to Application No. 4200007.09B. The purpose of this application was a minor modification to burn ultra-low sulfur (ULS) No. 2 fuel oil with black liquor solids (BLS) as a fuel for the No. 7 recovery furnace.

October 18, 2008 - Permit No. 01649T42 issued pursuant to Application No. 4200007.08A. The purpose of this application was a minor modification for the addition of a portable log chipper.

September 12, 2007 - Permit No. 01649T41 issued pursuant to Application No. 4200007.07B. This application was for an Administrative Amendment to remove the Boiler MACT standard from the Air Permit at the request of the facility. On June 8, 2007, the United States Court of Appeals for the District of Columbia Circuit issued a decision vacating in its entirety and remanding the NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters, or Boiler MACT, contained in 40 CFR 63 Subpart DDDDD.

July 23, 2007 - Permit No. 01649T40 issued pursuant to Application No. 4200007.07A. The purpose of this application was to incorporate enforceable conditions pertaining to the emissions and health-related impact of manganese from two distillate and residual-fired boilers and a coal, woodwaste, residual oil-fired boiler.

March 30, 2007 (with an effective date of April 16, 2007) - Permit No. 01649T39 issued pursuant to Application No. 4200007.05C. Although the initial Title V permit (Permit No. 01649T34) was previously issued, it was adjudicated by KapStone. The purpose of this application is to update the initial Title V Permit and add any additional language necessary for emission standards whose compliance dates are subsequent to the initial Title V permit.

VIII. Project Regulatory Review

The PSD/BACT monitoring and reporting conditions of the permit are being significantly modified and the previously established the .02D .0530(u) PSD applicability condition is being removed since the condition has been in the permit for more than 5 years. This application serves as notification as required by Subpart MM and 40 CFR 63.867(b)(3)(iv). A regulatory review for other unaffected sources, regulations and permit conditions of the permit will not be included in this document.

Prevention of Significant Deterioration/Best Available Control Technology
As part of the compliance monitoring for these BACT limits, the permit required that the daily black liquor solids (BLS) firing rate be no greater than 3.2 million lbs BLS/day and the annual firing rate be no greater than 584,000 tons per 12 months. However, KapStone believes that the recovery furnace is capable of firing a higher throughput and meeting the current BACT limits as currently configured, without further modification. The mill is requesting that the BACT monitoring be revised by removing the throughput limits and instead require monitoring of emissions using CEMS or stack test-based emission factors and daily BLS throughput. Annual rolling total emissions will be calculated and compared to BACT limits each day. Periodic stack testing will be performed to confirm or update emission factors.

Evaluation of Existing BACT
Because No. 7 Recovery Furnace is not undergoing a physical modification or change in method of operation, a BACT analysis is not required for this proposed project, however, the 2004 BACT analysis was revisited to ensure that the current BACT is still appropriate.

An electrostatic precipitator (ESP) is used for control of PM/PM10 from the recovery furnace. SO2, NOX, CO, VOC, and TRS are controlled via proper operation, furnace design, and combustion optimization. There have been no changes in technology that would indicate lower BACT limits or additional controls are feasible and a review of the RACT/BACT/LAER Clearinghouse (RBLC) Database for the past 10 years indicates that the current BACT limits are still appropriate.

An ESP for control of PM/PM10/PM2.5 represents the top level of control based on review of the RBLC database. The mill will continue to ensure compliance with the 0.021 gr/dscf at 8% O2 BACT limit through use of the ESP.

The Kraft recovery process is designed to recover key chemical constituents including sodium and sulfur for reuse in the process, therefore recovery furnaces are designed to maximize capture of sulfur and minimize sulfur lost through stack emissions. The No. 7 Recovery Furnace has historically emitted very low levels of SO2 and expects to continue to meet the existing BACT limits of 75 ppm @8% O2 (annual average) and 110 ppm at 8% O2 (3-hr rolling average) through proper design and optimization of furnace operations.

Recovery furnaces are a unique type of combustion source and conventional NOX reduction technologies cannot be readily applied. Selective Non-Catalytic Reduction (SNCR) and Selective Catalytic Reduction (SCR) were evaluated in the 2004 BACT analysis and were determined to be technically infeasible to apply. Combustion controls were selected as BACT and are still the control technology identified in the RBLC database for minimizing NOX from recovery furnaces. Combustion controls will continue to be used to meet the 100 ppm at 8% O2 NOX BACT limit.

For recovery furnaces, design and combustion conditions within the furnace have the greatest influence on CO, VOC, and TRS levels. Proper design, operation, and combustion control are still identified in the RBLC as control methods for CO, VOC, and TRS. Other add-on controls have not been commercially demonstrated for recovery furnaces. Optimum combustion controls will continue to be used to meet the 300 ppm at 8% O2 CO and 50 ppm at 8% O2 VOC BACT limits. The recovery furnace incorporates a low odor design and combustion optimization to minimize TRS emissions and will continue to use this method to meet the 5 ppm at 8% O2 TRS BACT limit.

A PSD increment demonstration and NAAQS analysis were performed with the 2004 PSD permit application. The 2004 project did not cause or contribute to an increase of PSD increments for PM/PM10/PM2.5 (all assumed equal), SO2, and NOX and the project did not contribute to an exceedance of the NAAQS for PM/PM10/PM2.5 (all assumed equal), SO2, NOX, and CO. Additional modeling demonstrations are not being submitted with this project because maximum allowable recovery furnace emissions are not increasing. The 2004 impact analysis on Class I Areas (Swanquarter) and the additional PSD impacts analysis are also representative and remain applicable to this project.

Permit condition 2.1.F.4.a contains BACT limits for the No. 7 Recovery Furnace. KapStone indicated they will continue to comply with the following BACT limits, therefore, no changes are required:

4. 15A NCAC 02D .0530: PREVENTION OF SIGNIFICANT DETERIORATION

a. The following Best Available Control Technology (BACT) limits shall not be exceeded when the No. 7 Recovery Furnace **(ID No. ES-08-PU-012)** is fired exclusively with Black Liquor Solids (BLS) or ultra-low sulfur No. 2 fuel oil blended with BLS:

Pollutant	BACT Emission Limits
PM	0.021 gr/dscf corrected to 8% O_2; and 144 tons per consecutive 12 month period
SO_2	75 ppm corrected to 8% O_2 (annual rolling average) 110 ppm corrected to 8% O_2 (3-hr average); and 571 tons per consecutive 12 month period
NO_X	100 ppm corrected to 8% O_2 (30-day rolling average); and 626 tons per consecutive 12 month period
CO	300 ppm corrected to 8% O_2 (8-hr rolling average); and 1,042 tons per consecutive 12 month period
VOC	50 ppm corrected to 8% O_2 (24-hr rolling average); and 95 tons per consecutive 12 month period
TRS	5 ppm corrected to 8% O_2 (12-hr rolling average); and 21 tons per consecutive 12 month period

Permit conditions 2.1.F.4.b-d contain the revised testing requirements for the No. 7 Recovery Furnace:

Testing [15A NCAC 02Q .0508(f)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test are above one or more of the limits given in Section 2.1 F.4. a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 2D .0530.

c. Under the provisions of NCGS 143-215.108, the Permittee shall demonstrate compliance with the emission limits above by testing the No. 7 Recovery Furnace, while firing BLS or ultra-low sulfur No. 2 fuel oil blended with BLS, for particulate matter, carbon monoxide, nitrogen oxides[1], sulfur dioxide, and VOCs emissions in accordance with a General Condition JJ and submitting the results to the DAQ. Testing shall be completed on or before **July 10, 2017** and once every five years, thereafter. However, if the results of the testing demonstrate emissions of any pollutant are equal to or greater than 80 percent of the respective emission limit in 2.1 F.4.a above, the testing frequency for that pollutant shall be increased to once every calendar year until the stack test results return to less than 80 percent of the limit. If any stack test demonstrates emissions are above a limit given in Section 2.1 F.4.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530.

d. The Permittee shall conduct a stack test for particulate matter within sixty calendar days of any one-hour average opacity reading in exceedance of twenty percent excluding periods of startup, shutdown, or malfunction as provided in 15A NCAC 02D .0535. The testing shall be performed in accordance with General Condition JJ. If the Permittee fails to complete a required stack test as provided above, or if the results of this test are above the particulate matter limit given in Section 2.1 F.4.a above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530.

Permit conditions 2.1.F.4.e-h contain the revised monitoring and recordkeeping requirements for the No. 7 Recovery Furnace. KapStone has proposed tracking the actual emissions of the PSD affected pollutants as a means of demonstrating compliance with the BACT limits in lieu of tracking the BLS throughput.

Monitoring/Recordkeeping [15A NCAC 02Q .0508(f)]

e. To ensure compliance, the Permittee shall calibrate, maintain, and operate continuous emissions monitoring systems (CEMs) as specified in Section 2.1.F.3.e through g above to determine total reduced sulfur (TRS) emissions (dry basis, corrected to 8 percent oxygen), and opacity for the No. 7 Recovery Furnace **(ID No. ES-08-PU-012).**

f. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if TRS and opacity are not monitored or if any 12-hour average TRS emissions exceeds the emission limit in Section 2.1.F.4.a above.

[1] The Permittee may use a continuous emissions monitoring system (CEMS) to monitor nitrogen oxide emissions in place of testing. If used, the CEMS shall be operated in accordance with the applicable requirements of 40 CFR 60 Appendix B and Appendix F or an alternative monitoring and quality assurance program approved by the DAQ and a summary of the CEMS monitoring shall be included with the quarterly reports required in Section 2.1.F.4.i. If any 30-day nitrogen oxides average exceeds 100 ppm corrected to 8 percent oxygen, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530.

g. To ensure that emissions are less than the annual limits in Section 2.1 F.4.a above, emissions shall be determined as follows:

Filterable Particulate Matter (FPM)
The most recent approved stack test result shall be used to demonstrate compliance with the FPM limits. Annual emissions of FPM shall be determined in accordance with the following equation.

$$\text{FPM Emissions (TPY)} = \sum_{d=1}^{365} \frac{FPM\ Stack\ Test\ Factor, lb}{TBLS} x \frac{TBLS}{day_d} x \frac{ton}{2000\ lb}$$

FPM Emissions = sum of emissions over the past 365 days, (TPY)
FPM Stack Test Factor = emission factor from most recent approved FPM emissions stack test, (lb/TBLS)
Firing Rate = daily TBLS firing rate, (TBLS/day)

Sulfur Dioxide (SO_2)
The most recent approved stack test result shall be used to demonstrate compliance with the SO_2 limits. Annual emissions of SO_2 shall be determined in accordance with the following equation.

$$SO_2 \text{ Emissions (TPY)} = \sum_{d=1}^{365} \frac{SO_2\ Stack\ Test\ Factor, lb}{TBLS} x \frac{TBLS}{day_d} x \frac{ton}{2000\ lb}$$

SO2 Emissions (TPY) = sum of emissions over the past 365 days, (TPY)
SO2 Stack Test Factor = emission factor from most recent approved SO2 emissions stack test, (lb/TBLS)
Firing Rate = daily TBLS firing rate, (TBLS/day)

Nitrogen Oxides (NO_X)
Emissions of Nitrogen Oxides shall be determined using a continuous emissions monitoring system (CEMS) meeting the requirements of 40 CFR Part 60 Appendix B and Appendix F (or an alternative monitoring and quality assurance program approved by DAQ) to demonstrate compliance with the 100 ppm at 8% O_2 (30-day rolling average) limit and to calculate annual NO_X emissions in accordance with the following equation.

$$NO_x \text{ Emissions (TPY)} = \sum_{d=1}^{365} daily\ avg\ \ ppm\ x \frac{46\ lb\ NO_x}{lbmol} x \frac{lbmol}{386.3\ ft^3} x \frac{daily\ avg\ flow, ft^3}{min} x \frac{60\ min}{hr} x \frac{24\ hr}{day_d} x \frac{ton}{2000\ lb}$$

NOx Emissions = sum of emissions over the past 365 days, (TPY)
NOx Daily avg ppm = daily average NOx concentration data from CEMS, (ppm)
46 lb NOx/lbmol = molecular weight of NOX, (lb NOX/lbmol)
Avg daily flow = average flow measured from the most recent approved stack test, (ft3/min)

Carbon Monoxide (CO)
The most recent approved stack test result shall be used to demonstrate compliance with the CO limits. Annual emissions of CO shall be determined in accordance with the following equation.

$$\text{CO Emissions (TPY)} = \sum_{d=1}^{365} \frac{CO\ Stack\ Test\ Factor, lb}{TBLS} x \frac{TBLS}{day_d} x \frac{ton}{2000\ lb}$$

CO Emissions = sum of emissions over the past 365 days, (TPY)
CO Stack Test Factor = emission factor from most recent approved CO emissions stack test, (lb/TBLS)
Firing Rate = daily TBLS firing rate, (TBLS/day)

Volatile Organic Compounds (VOC)
The most recent approved stack test result shall be used to demonstrate compliance with the VOC limits. Annual emissions of VOC shall be determined in accordance with the following equation.

$$\text{VOC Emissions (TPY)} = \sum_{d=1}^{365} \frac{VOC\ Stack\ Test\ Factor, lb}{TBLS} x \frac{Firing\ Rate, TBLS}{day_d} x \frac{ton}{2000\ lb}$$

VOC Emissions = sum of emissions over the past 365 days (TPY)
VOC Stack Test Factor= emission factor from most recent approved VOC emissions stack test, (lb/TBLS)
Firing Rate = daily TBLS firing rate, (TBLS/day)

Total Reduced Sulfur (TRS)
Emissions of Total Reduced Sulfur shall be determined using a continuous emissions monitoring system (CEMS) to demonstrate compliance with the 5 ppm at 8% O_2 (12-hr rolling average) limit and to calculate annual TRS emissions in accordance with the following equation.

$$TRS \text{ Emissions (TPY)} = \sum_{d=1}^{365} daily\ avg\ \ ppm\ x \frac{34\ lb\ TRS}{lbmol} x \frac{lbmol}{386.3\ ft^3} x \frac{daily\ avg\ flow, ft^3}{min} x \frac{60\ min}{hr} x \frac{24\ hr}{day_d} x \frac{ton}{2000\ lb}$$

TRS Emissions = sum of emissions over the past 365 days, (TPY)
TRS Daily avg ppm = daily average TRS concentration data from CEMS, (ppm)
34 lb TRS/lbmol = molecular weight of TRS as H2S, (lb TRS/lbmol)
Avg daily flow = average flow measured from the most recent approved stack test, (ft3/min)

i. The total amount of No. 6 and No. 4 fuel oil fired in the No. 7 Recovery Furnace shall not exceed **744,000 gallons per consecutive 12 month period**.

Documentation of the most recent approved, by DAQ – Stationary Source Compliance Branch (SSCB), stack test results shall determine the value of the following:
$FPM_{\text{Stack Test Factor}}$;
$SO_{2\text{Stack Test Factor}}$;
$NO_{x\text{Daily Average Flow}}$;
$CO_{\text{Stack Test Factor}}$;
$VOC_{\text{Stack Test Factor}}$; and
$TRS_{\text{Daily Average Flow}}$

Following approval of initial and subsequent completed performance tests for reestablishing operating parameters and stack test factors as noted above, the Permittee shall use the accepted operating parameters and stack test factors to demonstrate compliance with the FPM, SO_2, NOx, CO VOC and TRS limits.

The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if the annual emissions exceed the annual limits in Section 2.1 F.4.a above or the fuel usage rate exceeds the limits detailed above.

h. To ensure compliance, the Permittee shall maintain records of the amounts (in gallons) of fuel oil burned in the No. 7 Recovery Furnace (ID No. ES-08-PU-012) during each month~~;~~. The record of the fuel oil (in gallons) burned during each month shall be made available to an authorized representative of DAQ upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if the fuel usage rate exceeds the limits detailed above or if the records of fuel usage are not maintained.

Permit condition 2.1.F.4.i contains the revised reporting requirements for the No. 7 Recovery Furnace:

Reporting [15A NCAC 02Q .0508 (f)]

i. The Permittee shall submit a summary report, acceptable to the Regional Air Quality Supervisor, of monitoring and recordkeeping activities within 30 days after each calendar year quarter, due and postmarked on or before January 30 of each calendar year for the preceding three-month period between October and December, April 30 of each calendar year for the preceding three-month period between January and March, July 30 of each calendar year for the preceding three-month period between April and June, and October 30 of each calendar year for the preceding three-month period between July and September. The report shall contain the following for this source:
   i. the FPM, SO_2, NOx, CO, VOC, and TRS emissions and amount of No. 6 and No. 4 fuel oil fired per month for the previous 14 months. The emissions and total fuel oil use must be calculated for each of the 12-month periods over the previous 14 months;
   ii All instances of deviations from the requirements of this permit must be clearly identified.

Continued compliance with this rule in expected.

02D .0530(u) and Avoiding PSD by Using Projected Actual Emissions Increases

KapStone previously had an increase BLS throughput and emissions increases from the No. 7 Recovery Furnace. It appears this modification could have been a major PSD modification if emissions increase of NOx exceeded the significance rate. As a means of avoiding a PSD review, it was demonstrated the projected actual emissions did not result in a significant emissions increase. The required records and reports were required to be maintained for five years following regular operations after implementation of the No. 7 Recovery Furnace modification specified in Application No. 5900069.11A. Since it has been more than five years this condition was removed from the permit as it no longer applies.

15A NCAC 02D .1111 - 40 CFR 63 Subpart MM (MACT)
KapStone complies with the PM limits via a bubble limit. This application served as notification as required by 40 CFR 63.867(b)(3)(iv) that following the issuance of the revised permit, the recovery furnace may exceed 110% of the throughput measured during the initial performance test. 40 CFR 63.862(a)(1)(ii)(D) states that facilities must recalculate the bubble emission limit any time there is a physical or operational modification to the air pollution control device or if the unit is shut down for more than 60 days. The proposed project will not modify the recovery furnace air pollution control device, nor will the recovery furnace be shut down for greater than 60 days to implement the change. Therefore, the Roanoke Rapids Mill is not required to recalculate the emission limits for Subpart MM. The existing permit condition did not require modification. Continued compliance with this rule in expected.

15A NCAC 02D .0524 – 40 CFR 60 Subpart BB (NSPS)
The recovery furnace is subject to NSPS Subpart BB. The mill is not making a physical modification or changing the method of operation of the No. 7 recovery furnace; therefore, this project is not a NSPS modification and new requirements under NSPS BBa are not triggered. The PM BACT limit is below the NSPS BB limit and the TRS BACT limit is equal to the NSPS BB limit; therefore, compliance with this standard will not be affected with this project.

15A NCAC 02D .0614 – 40 CFR 64 Compliance Assurance Monitoring (CAM)
The CAM Rule does not apply to PSEUs that are subject to emission standards proposed pursuant to section 111 or 112 after November 15, 1990 (e.g., MACT II). The No. 7 Recovery Furnace uses an ESP to comply with applicable PM limits. However, CAM does not apply to the No. 7 Recovery Furnace because this source is subject to 40 CFR 63, Subpart MM (MACT II) and uses the MACT monitoring to demonstrate compliance with applicable PM limits.

15A NCAC 02D .0508 - Particulates from Pulp and Paper Mills –
Under this standard, PM emissions that are discharged from the recovery furnace are limited to 3.0 lb/ADTP. Compliance with 40 CFR 63, Subpart MM assures compliance with this standard. The recovery furnace will continue to comply with this emission limit.

15A NCAC 02D.0516 - Sulfur Dioxide Emissions from Combustion Sources
Under this standard, SO_2 emissions from any combustion source are limited to 2.3 lb/MMBtu input. The recovery furnace will continue to comply with this emission limit.

15A NCAC 02D .0521 - Control of Visible Emissions
Under this standard, visible emissions from the recovery furnace shall not be more than 40% opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87% opacity may occur not more than once in any hour nor more than four (4) times in any 24-hour period. The recovery furnace will continue to comply with this emission limit.

15A NCAC 02D .0528 - Total Reduced Sulfur from Kraft Pulp Mills
This emission standard applies to recovery furnaces, digester systems, evaporator systems, lime kilns, smelt tanks, and condensate stripping systems not subject to TRS emission standards under 40 CFR 60. The recovery furnace is subject to NSPS Subpart BB and is not subject to this rule.

15A NCAC 02D .0608 - Other Large Coal or Residual Oil Burners
The mill will determine sulfur dioxide emissions from the recovery furnace in accordance with this standard if the annual average capacity factor for residual fuel oil during the three most recent calendar years is greater than 30 percent.

15A NCAC 02D .1100 - Control of Toxic Air Pollutants
NCAC 2Q .0700 requires facilities that emit toxic air pollutants (TAPs) for which they are required to have a permit under 15 NCAC 02D.1100 to demonstrate compliance with the Acceptable Ambient Levels (AALs). Per 02Q .0702(a)(27), affected sources under 40 CFR 63 are exempt from the requirements of this rule. The recovery furnace is exempt from this regulation because it is subject to 40 CFR 63 Subpart MM. In addition, the recovery furnace has been included in past mill-wide toxics modeling analyses and maximum allowable recovery furnace emissions do not increase with this project. Therefore, no updated air toxics modeling demonstration is required. This modification does not present an unacceptable risk to human health.

15A NCAC 02D .0304(b)(1) - Zoning Consistency Determination
The proposed modification does not constitute a new facility or a facility expansion. Therefore, the procedures outlined in 02Q .0113 do not apply to this application.

IX. Changes to Existing Air Permit

Page(s)	Section(s)	Description of Change(s)
All	All	Update dates and permit revision number
6	1	Change description of No. 7 Recovery Furnace removing 3.20 million pounds per day of BLS
21	2.1 F .4. b.	Revised testing requirement
21-23	2.1 F .4. g.	Revised monitoring/recordkeeping condition to allow tracking of actual emissions based on last stack test results and remove the 24-hour and 12-month BLS limits
23	2.1 F .4. i.	Insert quarterly reporting requirement as a summary report for PSD is required quarterly
23-24	2.1 F .5	Remove 02D .0530(u) PSD avoidance condition
74-82	2.3	Replace General Conditions section with latest version (ver. 4.0)

X. Compliance Statement

On June 9, 2015 the facility was inspected by Mr. Will Wike of the RRO and KapStone appeared to be operating in compliance with all permit requirements.

XI. Summary
The previous BACT determination was reevaluated, see above, and the existing ESP remains BACT. A revised PSD Air Quality Analysis and the Additional Impacts Analysis were not required.

XII. Public Participation Requirements

40 CFR 51.166(q) *Public participation* requires that reviewing authority shall:

"(i) Make a preliminary determination whether construction should be approved, approved with conditions, or disapproved."

> This document satisfies this requirement providing a preliminary determination that construction should be approved consistent with the permit conditions described herein.

"(ii) Make available in at least one location in each region in which the proposed source would be constructed a copy of all materials the applicant submitted, a copy of the preliminary determination, and a copy or summary of other materials, if any, considered in making the preliminary determination."

> This preliminary determination, application, and draft permit will be made available in the Raleigh Regional Office and in the Raleigh Central Office. In addition, the preliminary determination and draft permit will be made available on the NCDAQ public notice webpage.

"(iii) Notify the public, by advertisement in a newspaper of general circulation in each region in which the proposed source would be constructed, of the application, the preliminary determination, the degree of increment consumption that is expected from the source or modification, and of the opportunity for comment at a public hearing as well as written public comment."

> The NCDAQ will prepare a public notice (See Appendix A) that will be published in a newspaper of general circulation in the region.

"(iv) Send a copy of the notice of public comment to the applicant, the Administrator and to officials and agencies having cognizance over the location where the proposed construction would occur as follows: Any other State or local air pollution control agencies, the chief executives of the city and county where the source would be located; any comprehensive regional land use planning agency, and any State, Federal Land Manager, or Indian Governing body whose lands may be affected by emissions from the source or modification."

The NCDAQ will send the public notice (see Appendix A) to Mr. Joseph Scherer, City Manager for the City of Roanoke Rapids 1040 Roanoke Avenue, Roanoke Rapids, NC 27870; Mr. Tony Brown, Halifax County Manager at PO Box 38, Halifax, NC 27839 and Mayor Emery Doughtie of the City of Roanoke Rapids at10400 Roanoke Avenue, Roanoke Rapids, North Carolina 27870.

"(v) Provide opportunity for a public hearing for interested persons to appear and submit written or oral comments on the air quality impact of the source, alternatives to it, the control technology required, and other appropriate considerations."

> The NCDAQ public notice (See Appendix A) provides contact information to allow interested persons to submit comments and/or request a public hearing.

XIII. Appendices

The following appendices contain the following required documents:

- 30-day Public Notice
- Public Participation Letters; Transmittal letter to EPA with materials for their 45-day review and comment, notification of the applicant and regional office and notification of the public notice to officials of the local affected communities
- A copy of the Draft Permit

Appendix A – Public Notice

PUBLIC NOTICE

PUBLIC NOTICE ON PRELIMINARY DETERMINATION REGARDING APPROVAL OF AN APPLICATION SUBMITTED UNDER THE "REGULATIONS FOR THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY"

KapStone Kraft Paper Corporation has applied to the North Carolina Department of Environmental Quality, Division of Air Quality (DAQ), Permitting Section for the approval to increase the Black Liquor Solids (BLS) throughput in the existing No. 7 Recovery furnace with electrostatic precipitator control device located at: 100 Gaston Road, Roanoke Rapids, North Carolina 27870.

The proposed facility is subject to review and processing under North Carolina Administrative Code (NCAC), Title 15A, Sub-Chapter 02D .0530 - Prevention of Significant Deterioration and 02Q .0500 – Title V Procedures. The facility is defined as a "major stationary source" for the discharge of significant quantities of PM, CO, NOx, SO_2, VOC and TRS.

The application has been reviewed by the DAQ, Major New Source Review Branch in Raleigh, North Carolina to determine compliance with the requirements of the North Carolina Environmental Management Commission air pollution regulations.

A preliminary review, including analysis of the impact of the facility emissions on local air quality, has led to the determination that the project can be approved, and the DAQ air permit issued, if certain permit conditions are met.

Halifax County is classified as an attainment area. Compliance with all ambient air quality standards and the PSD increments is projected.

A copy of all data and the application submitted by KapStone Kraft Paper Corporation and other materials used by the DAQ in making this preliminary determination are available for public inspection during normal business hours at the following locations:

NC DENR Division of Air Quality Major New Source Review Branch 217 West Jones Street Raleigh, N.C. 27603	or	NCDENR Division of Air Quality Raleigh Regional Office 3800 Barrett Drive Raleigh, NC 27609

Information on the proposed permit, the permit application, and the staff review is available by writing or calling:

William D. Willets, P.E
Chief, Permitting Section
North Carolina Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
Telephone: (919) 707-8469

After weighing relevant comments received by March 19, 2016, and other available information on the project, the DAQ will act on the PSD application.

Appendix B.1 – Public Participation Letters

February 17, 2016

To: Ms. Heather Ceron
Air Permits Section
U.S. EPA Region 4
Sam Nunn Atlanta Federal Building
61 Forsyth Street, S. W.
Atlanta, Georgia 30303-3104

Subject: Title V/PSD
Application No. 4200007.15E
KapStone Kraft Paper Corporation
Facility ID: 4200007
Roanoke Rapids, Halifax County, 100 Gaston Road, North Carolina
Draft Air Quality Permit No. 01649T55

KapStone Kraft Paper Corporation has applied to the North Carolina Department of Environmental Quality, Division of Air Quality (DAQ), Permitting Section for approval PSD modification for an increase in the Black Liquor Solids (BLS) throughput through the PSD/BACT affected No. 7 Recovery Furnace at the facility. The proposed project involves an increase in the Black Liquor Solids (BLS) throughput in the existing No. 7 Recovery furnace with electrostatic precipitator control device at its facility in Roanoke Rapids, North Carolina. This project will not result in significant emissions increases of any PSD regulated criteria pollutants.

Please find an enclosed copy of the "Pre-Construction and Preliminary Determination" for KapStone Kraft Paper Corporation located in Roanoke Rapids, Halifax County, North Carolina.

If you wish to make comments on the project, you should submit them in writing by no later than April 2, 2016. Should you have any questions or need further information, please contact me at (919) 707-8728.

Sincerely,

Charles F. Yirka
Environmental Engineer

Enclosure

c: Central files

Appendix B.2 – Public Participation Letters

February 17, 2016

Wilbur Kessinger, Jr.
Vice President of Mill Operations
(252) 533-6398
100 Gaston Road
Roanoke Rapids, NC 27870

Subject: PSD Preliminary Determination
Application No. 4200007.15E
KapStone Kraft Paper Corporation
Facility ID: 4200007
Roanoke Rapids, Halifax County, 100 Gaston Road, North Carolina
Draft Air Quality Permit No. 01649T55

Dear Mr. Kessinger:

Enclosed is a copy of the "Pre-Construction and Preliminary Determination" for KapStone Kraft Paper Corporation located at 100 Gaston Road, Roanoke Rapids, North Carolina 27870. The facility has provided a Best Available Control Technology (BACT) analysis for the proposed project involving an increase in the Black Liquor Solids (BLS) throughput in the existing No. 7 Recovery furnace with electrostatic precipitator control device.

The public notice is scheduled for publication in The Roanoke Rapids Daily Herald in Halifax County on February 17, 2016 and shall be mailed to persons on the Division's mailing list for air quality permit notices. Should you have any questions concerning this matter, please contact me at (919) 707-8728.

Sincerely,

Charles F. Yirka
Environmental Engineer

Enclosure
c: Central files

Appendix B.3 – Public Participation Letters

February 17, 2016

Mr. Charles McEachern
Raleigh Regional Office
3800 Barrett Drive
Raleigh, NC 27609

Subject: PSD Preliminary Determination
Application No. 4200007.15E
Unilin Flooring N.V.
Facility ID: 4200007
Roanoke Rapids, North Carolina, Halifax County
Draft Air Quality Permit No. 01649T55

Dear Mr. McEachern:

Enclosed is a copy of the "Pre-Construction and Preliminary Determination" for KapStone Kraft Paper Corporation located at 100 Gaston Road, Roanoke Rapids, North Carolina 27870.

The public notice is scheduled for publication in The Roanoke Rapids Daily Herald in Halifax County on February 17, 2016 and shall be mailed to persons on the Division's mailing list for air quality permit notices. Should you have any questions concerning this matter, please contact me at (919) 707-8728.

Sincerely,

Charles F. Yirka
Environmental Engineer

Enclosure

c: Central files

Appendix B.4 – Public Participation Letters

February 17, 2016

Mayor Emery Doughtie
City of Roanoke Rapids
10400 Roanoke Avenue
Roanoke Rapids, North Carolina 27870

Subject: PSD Preliminary Determination
Application No. 4200007.15E
Facility ID: 4200007
Roanoke Rapids, Halifax County
Draft Air Quality Permit No. 01649T55

Dear Mayor Emery Doughtie:

KapStone Kraft Paper Corporation located at100 Gaston Road, Roanoke Rapids, North Carolina 27870 applied to the North Carolina Department of Environment and Natural Resources, Division of Air Quality, Permits Section, for a modification to their existing facility. The modification involves an increase in the Black Liquor Solids (BLS) throughput in the existing No. 7 Recovery furnace with electrostatic precipitator control device.

The proposed project is subject to review under the North Carolina Administrative Code, Title 15A, Environment Management Subchapter 2D, Section .0530 "Prevention of Significant Deterioration", 40 CFR 51.166, and Subchapter 2Q, Section .0101. The regulations require that a public notice be published in a newspaper that serves the area and that local officials are informed of this project. A copy of the public notice, which will be published in The Roanoke Rapids Daily Herald in Halifax County on February 17, 2016, is enclosed for your information.

If you wish to make any comments on this project, you should submit them in writing within thirty (30) days of the date of public notice. Should you have any questions concerning this matter, please contact me in at (919) 707-8728.

Sincerely,

Charles F. Yirka
Environmental Engineer

Enclosure
c: Central files

Appendix B.5 – Public Participation Letters

February 17, 2016

Mr. Tony Brown
Halifax County Manager
PO Box 38, Halifax, North Carolina 27839

Subject: PSD Preliminary Determination
Application No. 4200007.15E
Facility ID: 4200007
Roanoke Rapids, Halifax County
Draft Air Quality Permit No. 01649T55

Dear Mr. Tony Brown:

KapStone Kraft Paper Corporation located at100 Gaston Road, Roanoke Rapids, North Carolina 27870 applied to the North Carolina Department of Environment and Natural Resources, Division of Air Quality, Permits Section, for a modification to their existing facility. The modification involves an increase in the Black Liquor Solids (BLS) throughput in the existing No. 7 Recovery furnace with electrostatic precipitator control device.

The proposed project is subject to review under the North Carolina Administrative Code, Title 15A, Environment Management Subchapter 2D, Section .0530 "Prevention of Significant Deterioration", 40 CFR 51.166, and Subchapter 2Q, Section .0101. The regulations require that a public notice be published in a newspaper that serves the area and that local officials are informed of this project. A copy of the public notice, which will be published in The Roanoke Rapids Daily Herald in Halifax County on February 17, 2016, is enclosed for your information.

If you wish to make any comments on this project, you should submit them in writing within thirty (30) days of the date of public notice. Should you have any questions concerning this matter, please contact me in at (919) 707-8728.

Sincerely,

Charles F. Yirka
Environmental Engineer

Enclosure
c: Central files

Appendix C – Draft Permit

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